

NOTES ON AUSTRALIAN POLYPLACOPHORA, INCLUDING  
 DESCRIPTIONS OF TWO NEW GENERA, A NEW VARIETY,  
 AND THE DESCRIPTION AND PROPOSED RECOGNITION  
 OF MR. BEDNALL'S STENOCHITON PILSBRYANUS.

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PLATE XI.

ISCHNOCHITONIDAE.

Genus STENOCHITON.

ZOSTERICOLA, n. subgen.

Differs from *Stenochiton* (*sensu stricto*) in that the shell is short and broad instead of being elongated and narrow. It possesses the highly polished and unsculptured surface and minute girdle scales so distinctive of the true *Stenochiton*. It also lives on the same order of plants (*Fluviales*) or sea grasses.

The writer foreshadowed the establishment of this genus in the paper on *Stenochitons* (Trans. Roy. Soc. S. Austr., vol. xlii., 1918), and included the subgeneric name of *Zostericola* in the distribution list published in the same number of the Transactions.

The name *Zostericola* is derived from the name of the genus of plants upon which it is said to have been found, and upon which it no doubt lives.

Type *Stenochiton pilsbryanus*, Bednall.

ZOSTERICOLA PILSBRYANUS, Bednall.

*Introduction.*—In my monograph on the genus *Stenochiton*, mentioned above, I referred to the impossibility of reconciling any of the known species with Mr. Bednall's descriptions and drawings of *Stenochiton pilsbryanus* (Proc. Mal Soc., vol. ii., pt. 4, 1897). I trusted that the type would have reached Mr. Iredale in London safely, as only by reference to the type could the matter be cleared up. Mr. Iredale writes me (February 16, 1919), "I think you are right in naming the shell that has been called *pilsbryanus*. I queried it, as it did not agree with Bednall's figures at all. However, no *Stenochiton* seemed like that figure. The type seems missing, as the specimens I have marked 'type' do not agree with the figure, nor have I seen the dissections." Thus no help towards the elucidation of the problem is likely to come

from the late Mr. Bednall's collection, the material now being in the hands of Mr. Iredale, and reported upon by him as above.

When in Philadelphia last year Dr. Henry A. Pilsbry showed me some of the material that Mr. Bednall had sent him (at the time the description of *S. pilsbryanus* was written) as being the new shell. I easily identified in the material shown to me the three species *S. juloides*, Ad. and Ang.; *S. cymodocealis*, Ashby; and *S. posidonialis*, Ashby; all very small and juvenile.

It is therefore fairly evident that Mr. Bednall's drawings and descriptions were made from more than one specimen covering more than one species. I think it not unlikely that there was even a fourth species represented, as I did not see all the material. I therefore propose to refer the species I am describing hereunder to Mr. Bednall's species for the following reasons:—

- (1) I am anxious to retain the names of my friend Dr. Pilsbry and my late friend Mr. Bednall as associated with the interesting genus of *Stenochiton*.
- (2) It is desirable to keep our list of species free from those that are impossible of identification.
- (3) The form I am describing corresponds most closely with the figure of the shell in Mr. Bednall's paper.
- (4) Mr. Bednall's shell was practically from the same locality, "Troubridge Shoal, St. Vincent Gulf, on *Zostera*." Tapley Shoal is about 6 miles from Troubridge.

*General appearance*.—Broad and short, glossy, rounded, without sculpture; the anterior valve unusually broad, the last five valves tapering very slightly towards the posterior. The general contour of the shell closely resembles that of *Terenochiton matthewsianus*, Bednall; at a distance of a couple of feet it might easily be mistaken for that species.

*Colour and markings*.—In the dried specimen with the animal inside the anterior and posterior valves are antique brown (Ridgway's colour standard), shading in the centre valves to semi-transparent creamy-white, sparsely mottled with pale olive-green. A number of reticulate whitish markings commence at the posterior margin of the dorsal area, and spread fan-like anteriorwise. When disarticulated, and the animal cleaned away, the shell is very transparent. The brown anterior and posterior portions become pale-creamy and olivaceous, and the central valves transparent white and pale olive. Two wavy (broadly V-shaped) bands traverse both

the pleural and lateral areas, also other olivaceous markings are present.

*Anterior valve.*—Unsculptured; under a high power the valve is seen to be covered with whitish spots, suggesting regular decussation, but the brownish-olive mottling so generally covers the valve that in many parts the white spots are indistinguishable. The shell is convex, evenly rounded and arched, about twice as broad as long, teeth well defined, with rounded, slightly wavy edges, eaves well developed, teeth propped or fluted, slits 16, inside whitish and glassy.

*Posterior valve.*—Unusually broad for this valve, being only slightly less broad than the median valves, mucro slightly anterior, posterior slope evenly rounded but steep, convex. The portion of shell anterior to mucro is distinguishable from the posterior part, being smooth and slightly paler in colour; growth lines are visible on the posterior portion, also a slight ridge divides the portions, starting at the mucro and running diagonally to the suture. Behind the mucro is another half-moon-shaped shallow ridge, making a sort of false mucro. Inside the shell is white and transparent, multifissate. I counted 9 clearly-defined slits with square, broad-ended apices in the small terminal broken portion, but did not disarticulate the other and larger part of this valve. The teeth are rounded, and are fluted or propped on the inside as in the anterior valves, eaves distinct.

*Median valves.*—Uniformly smooth, glossy, and unsculptured; the anterior margin of the lateral area is slightly raised, in some of the valves, especially in valve 2. The dorsal area barely distinguishable, but is slightly raised and flatly beaked. Under a low power 4 lateral, wavy, longitudinal, olivaceous bands are easily seen; one valve has six of these bands on either side. When disarticulated and cleaned and seen under a high power some additional markings are revealed. The dorsal and pleural areas are very distinct from the lateral, being covered with longitudinal wavy lines of a pale green tinge; these to a certain extent merge into one another, giving the reticulate appearance before referred to. This system of marking also covers the broad and flat beak; the broad interspaces are white. The lateral area is evenly covered with pale greenish spots, which suggest small pustules, but I am unable to discover any rising in the shell. In some lights, especially daylight, the white interspaces look like white spots and the olivaceous markings like interspaces. The sutural laminae are large, produced to about half the width (longitudinal) of the shell, and separated by a wide sinus; teeth fairly sharp, not rounded as in the anterior and posterior valves, and I can

find no sign of propping; 2 well-defined slits; inside transparent and glossy. The eaves under a high power are numerous notched, these being too shallow to term slits. The median valves vary in length, but are fully three times as wide as long, *i.e.*, the longitudinal measurement is one-third that of the lateral one.

*Girdle*.—Very narrow, and thickly clothed with minute, irregular, flattened scales, which do not appear to imbricate. Darkish blotches are noticeable opposite each suture.

*Measurements*.—The shell in the dried specimen is  $5\frac{1}{2}$  mm. by 3 mm.; it is more than likely that a live specimen would measure 6 by  $3\frac{1}{2}$  mm.

*Locality*.—I am indebted to Dr. Torr for the specimen described above, and he has loaned it to me for the purposes of this paper. He had it from the collection of the late Professor Ralph Tate. It is labelled in his handwriting, "Tapley Shoal, living on *Zostera*." This shoal is about 6 miles from Troubridge lighthouse, south of Yorke Peninsula, in South Australia.

*Type*.—The type will remain in Dr. Torr's collection, but he has informed me that it will ultimately be placed in the South Australian Museum.

A second specimen, measuring just under 4 mm. by about 2 mm., and therefore half as wide as long, was collected by myself at Marino, probably on *Posidonia*, on February 19, 1910. These are the only two specimens that up to the present have come under my notice. This being a well-preserved, although a diminutive one, its colouration is more likely to be normal than is the case with the type. I therefore append a description.

*General colour*.—Serpentine green (Ridgway's Colour Standards, pl. xvi.). The valves 2 to 4 have the dorsal area outlined with a broad V-shaped white mark. The posterior and apical portions of anterior valve are white. The sides are broadly and irregularly banded with white. The girdle has a broad darkish blotch at the sutures; the two opposite the sutures of the anterior valve are black; there are seven irregularly-spaced blotches in front of same valve.

*Shell*.—The shell is more beaked than is the case with the type, and there is a slight elevation of the dorsal area near the beak in the first four valves. Starting at the posterior margin of the beak are a few shallow, circular elevations, which die away towards the middle of the anterior portion of the lateral area. These elevations are only seen in some lights with a high-power lens. The whole shell is highly polished and transparent.



## PLAXIPHORA MATTHEWSI, Iredale.

(Proc. Mal. Soc. Lon., vol. ix., June, 1910, pp. 96-100.)

*Frembleya matthewsi*, Iredale (Dis. List. Austr. Polyplacophora, Ashby: Proc. Roy. Soc. S. Austr., vol. xlii., 1918, p. 85).

I notice this season that each of the three small specimens of the above shell that have fallen to my lot during this summer's collecting have a remarkable feature present on the girdles, previously unnoticed. On reference to my cabinet I find that this feature is present in all my specimens, which include the following localities: Marino, Cape Jervis, Encounter Bay, and Port Lincoln.

*New feature.*—The feature referred to is the presence of a large number of slender processes, which for want of a better term we will call spicules, surmounted with strange porcelainous heads. These are not cylindrical, as in *Loricella angasi*, and which were described in my earlier paper of this year, but are flat on one side and rounded on the other, and are curved like the blade of an oar or scull, but sharply pointed. The surface is highly polished and white, in some lights, showing a few transverse lines; the stalk, bristle, or spicule, as it is previously called, is in fully-developed specimens long and slender and much curved (sickle shaped) when dry. The size of these heads varies considerably; some are fully half the length of the stalk that supports them, others again are supported on long stalks and have shorter heads; all the heads are broad-based, curved, and pointed at apex. They take their rise chiefly near the outer edge of the girdle, but many are sessile, only the porcelainous blade can be seen pushing out of the girdle amongst the short ordinary spicules which form the girdle fringe.

*Girdle spicules.*—The species under discussion has three forms of spicules—if these oar-headed processes can be termed spicules at all. There are the long, coarse, dark brown spicules or bristles that take their rise in bunches at each suture; these are taper-pointed, like a needle. Then there are a great many short, transparent, rather blunt-pointed spicules that form the fringe of the girdle. Lastly, there are these organs that I have termed oar-headed spicules, the stalks of which are semi-transparent and pale brown.

*Comparisons.*—While all the specimens I have collected exhibit oar-headed spicules, I have two, given me by Mr. W. L. May, of Tasmania, from Port Arthur in that State, that show no such spicules, which of course may be due to careless handling, but although Messrs. May and Iredale refer this Port Arthur form to the species under review, there are certainly differences both in the girdle and in the sculpture,

so that further investigation may not unlikely prove them distinct. Mr. May is endeavouring to obtain some fresh material. Then, again, I have a single shell that I collected at Port Lincoln, which is strongly carinated, but otherwise both in girdle and sculpture approaches the Tasmanian shells, and in this specimen also there is no evidence of the strange oar-headed spicules.

Family MOPALIIDAE, Pilsbry.

KOPIONELLA, n. gen.

Differs from *Plaxiphora*, Gray—

- (1) In having peculiar oar-headed girdle bristles or spicules.
- (2) In having an elevated, recurved tail valve with terminal mucro.
- (3) The minor differences detailed hereunder.

Differs from *Frembleyana*, H. Ad.

- (1) In having peculiar oar-headed bristles or spicules.
- (2) In the slits in the median valves being centrally situated and sinus, especially in tail valve, being much narrower.
- (3) The minor characters detailed below.

*Type.*—*Plaxiphora matthewsi*, Iredale. The specimen described herein is being presented to the South Australian Museum.

*Description and comparisons of further differences.*—For purposes of this comparison *Plaxiphora albida* is used as typical of the genus *Plaxiphora*. In *P. matthewsi*, Ire., the upper side of the tail valve is very distinct from *P. albida*, Blain., in that the anterior and posterior margins of the tegmentum are so folded over as to form strongly-raised ribs; the mucro is terminal, much raised, and slightly recurved, as in *Loricella*. Inside the sinus is comparatively narrow and deep, whereas in *Plaxiphora* the sinus is wide. In the median valves of *P. matthewsi* the tegmentum of the upper-side is folded over to the inside, and forms there a strongly-raised rib, extending from side to side; in the anterior valve this folding forms a still deeper and sharper ridge. While there is the infolding in the *Plaxiphora*, this characteristic ridge is not formed. The teeth of the anterior valve are much more cleanly cut and less clumsy and thick than is the case in the *Plaxiphora*. The slits in the median valves show a striking feature in that that portion abutting on the slit is carried upwards under the eaves in two pillars.

*Affinities.*—It is a little difficult to know where the proposed new genus should be placed. Dr. Pilsbry points out (Man. Con., vol. xiv., p. 312) that the genera *Placiphorella* and *Mopalia* are separated from the *Plaxiphora* in that the tail valve of the latter is unslit, with the additional character in the former of “peculiar girdle bristles”; now the species under review has the tail valve unslit, as in *Plaxiphora*, but has, on the other hand, a striking character in its “peculiar girdle bristles.”

I pointed out in my paper on *Loricella* some points of similarity between that genus and *Placiphorella*. Since writing my description and preparing figures of the new features noted in *P. matthewsi*, I have noticed Messrs. Iredale and May's remarks on this species in their valuable paper (Proc. Mal. Soc., vol. xii., pts. ii. and iii., Nov., 1916, p. 101), where they say, referring to *P. matthewsi*, “Receipt of well-preserved specimens from Tasmania shows that the species has no close relationship with *Frembleya*, the animal being obviously different. This is now being investigated, but in the meanwhile a nearer ally from a superficial examination might be *Loricella*.”

The outward appearance of the tail valve certainly suggests *Loricella*, and the strange girdle bristles do still more so, but the unslit tail valve and the non-emarginate girdle show a closer affinity with the Mopaliidae, Pils. For the present I think we must leave the suggested new genus under Pilsbry's family Mopaliidae, but future research may necessitate some revision of this family and that of the Liolophurinae.

RHYSSOPLAX TORRIANUS, H. and H., var. KLEMI, nov.

Amongst the specimens of the above chiton collected by Dr. Torr and Mr. Klem at Corny Point, Yorke Peninsula, is a rather striking variant from the normal form. The usual deep, longitudinal sulci, edged with black, which traverse the pleural areas, are reduced in this specimen on some valves to three, on others four on each side, and the similar black dashes on the dorsal area vary from one to two on each side. Again, the sulci are hardly developed at all, and the black lines are most of them mere dashes on the posterior portion only, of the pleural areas. The general effect is rather striking, the shell looking decidedly bare of markings and sculpture. The specimen is in Dr. Torr's collection.

This variety appears sufficiently distinctive to deserve a name, and therefore I suggest that it be known as var. *klemi*, after the gentleman who was co-worker with Dr. Torr at the time it was collected.

ANISORADSLA MAWLEI, I. and M., subspecies SAUNDERSI, Ashby.  
(Trans. Roy. Soc. S. Austr., vol. xlii., 1918.)

In my "Notes on South Australian *Polyplacophora*" I gave a brief description of a new chiton, giving it the name of *saundersi*, and placing it, with some doubt, as a subspecies of *Anisoradsia mawlei*, I and M. Since my return from America my friend Mr. W. L. May has supplied me with some splendid specimens of that species, and I can now authoritatively say that I was wrong in placing it in that genus. I am sending the type to Mr. Iredale for his comments, as in 1917 I sent him a second specimen collected at the same time and place.

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#### DESCRIPTION OF PLATE XI.

- Fig. 1. Portion of shell and girdle of *Kopionella*, n. gen., *matthewsi*, Iredale,  $\times 25$ , showing oar-headed spicules in girdle, p. 71.
- „ 1a. Girdle of same,  $\times 100$ , showing oar-headed spicules, sutural spicules, and fringe spicules.
- „ 2. Shell of *Zostericola*, n. gen., *pilsbryanus*, Bednall,  $\times 9$ , p. 66.
- „ 2a. Anterior valve of same.
- „ 2b. Median valve of same.
- „ 2c. Inside of median valve of same.
- „ 3. Shell of *Rhyssoplax torrianus*, H. and H., var. *klemi*, n. var.,  $\times 4\frac{1}{2}$ , p. 72.

NOTE.—The enlargements are only approximate.

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